

Brainstorming Success Criteria & Performance Standards for SAV mitigation projects



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SAV Workgroup Meeting

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Background & Current Approach

- Increase in MD projects where SAV mitigation/restoration is required (~3 this year)
 - Have been other “self-mitigating” projects and out-of-kind mitigation projects
- Performance standards/success criteria are based off tidal wetland metrics
 - Annual monitoring
 - Minimum % cover required after 3 years → Replant/Reseed if not met
 - Minimum % cover required after 5 years → Contingency if not met
- Consider reference sites and regional trends

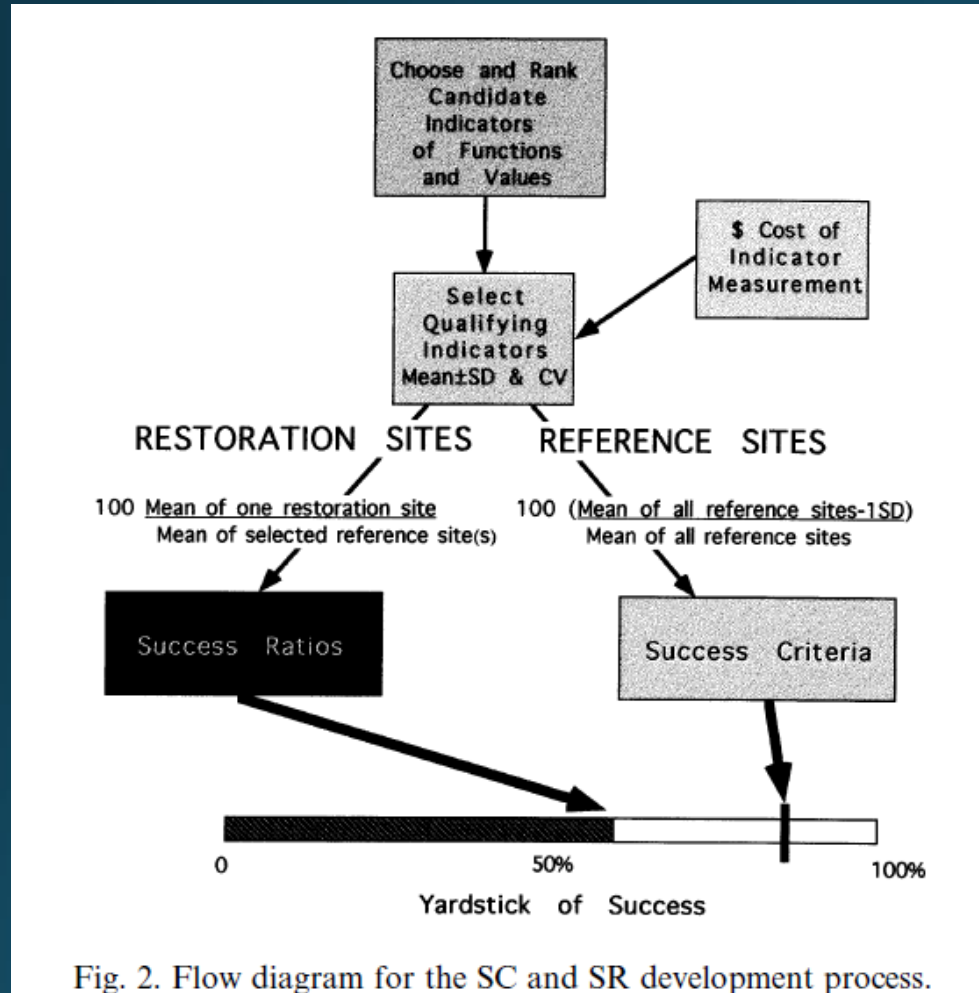
Existing Guidance

- Fonseca et al. *Guidelines for the Conservation and Restoration of Seagrasses in the United States and Adjacent Waters*, 1998
 - “unassisted persistence of the **required acreage** of seagrass coverage for a prescribed **period of time** (suggested minimum of **5 years**)”
- Massachusetts Division of Marine Fisheries Eelgrass Restoration and Monitoring Technical Guidance, 2009
 - “...successful transplant should demonstrate at least **25% expansion** of areal coverage **within 1 year** of transplanting. ...After the **first 3 years** the parameters should be on a **trajectory approaching reference levels.**”
 - Short et al. (2000) method

Existing Guidance

- California Eelgrass Mitigation Policy and Implementing Guidelines, 2014
 - “Restored eelgrass habitat is expected to develop through an **initial 3 year monitoring** period such that, within 36 months following planting, it **meets or exceeds the full coverage** (area) and **not less than 85 percent of the density** relative to the initial condition of affected eelgrass habitat. Restored eelgrass habitat is expected to **sustain this condition** for at least **2 additional years**.”
- Florida DEP *Guidance on Surveys for Submerged Aquatic Vegetation Compensatory Mitigation Projects*, 2020
 - Success criteria generally reflect the site has achieved (or is trending toward) the **acreage and level of ecological function** scored by the department, considering the monitoring duration and the time-lag applied to the project. The success criteria for the mitigation site will typically be **based on comparisons with the reference site(s)**, which the department has determined 1) will provide functions similar to the impacted community and 2) the mitigation site is likely to resemble over time.
 - Success criteria are typically based on the **net-acreage** and **percent cover** by all seagrass species

Existing Guidance



Short et al. (2000)

BOX 4.2: HOW TO MEASURE SUCCESS USING THRESHOLD VALUE AND QUALITY RATIO

For example, shoot density per m² in the restored bed can be compared with the reference bed(s) using a minimum of 10 randomly placed quadrats in each bed. Shoot density in the restored bed after five years was averaged to 515 shoots per m².

The shoot density of the reference beds was measured at an average of 560 ± 102 (mean ± SD) shoots per m². Thus, the quality ratio is 515/560 = 0.92. Threshold value = (560-102) / 560 = 0.82.

Quality ratio > threshold value (0.92 > 0.82). This means that the restoration was successful.

The threshold value can also be used to determine whether there have been increases in (i) biomass, (ii) maximum depth distribution (iii) sediment variables, and (iv) the abundance and diversity of fish and invertebrates.

A threshold value is a point at which a significant change has occurred within the restored bed:

Threshold value = (average of parameter *a* - 1 SD in reference beds) / (average of parameter *a* in reference beds). Note: parameter *a* can be any parameter (e.g. shoot density or extent).

Where SD is the standard deviation.

Quality ratio = (average of parameter *a* in the restored bed) / (average of parameter *a* in the reference bed)

If the quality ratio is greater than the threshold value, the restoration project has been a success.

Quality ratio > threshold value. Project successful

Gamble et al. (2021)

Objectives

- Brainstorming Session
 - Don't expect consensus right now – we'll finalize standards at our winter meeting!
- Provide a reasonable and consistent approach for future projects
- Brainstorm performance standards and success criteria
 - Indicators*
 - Spatial Extent
 - Comparison to Reference Site(s)*
 - Time Period
- https://jamboard.google.com/d/1Wt-ZrVWOjMUTBs9_423zo2DWCYCRrmcAd_g-4sZa7gk8/edit?usp=sharing